The turning point has been reached in the history of this really great undertaking. The chief support has come through the generosity of the Swiss government, and it is hoped that the American government and some of the leading American institutions will unite in placing this work upon a secure foundation. Naturally one of the first questions asked is how the undertaking is regarded abroad, and why it should receive the united support of workers in the various lines of natural history. There are several striking proofs of the esteem in which the concilium is held on the continent. Through the death of Professor Carus, who has given his entire life to bibliography, almost without remuneration, a vacancy has occurred which the concilium has been invited to fill. It is a matter of continuing the zoological bibliography conducted by one who has been universally acknowledged to be a master in his subject and which reaches back without interruption to the year 1700. Before agreeing to undertake to carry on this work, the concilium is brought to face obligations which it can not fulfill without new support. At the same time the botanists on the continent, impressed with the thoroughness of the work of the concilium, at the international conference held in Leiden on April 16, voted to place the editorship of the well-known botanical bibliography in the hands of the concilium, as soon as funds could be obtained for doing the work. In both these cases, zoology and botany, it is only a small portion of the entire expense that is needed, but failure to obtain this comparatively small aid will make it impossible for the concilium to undertake these new duties. Meanwhile a number of European geologists are awaiting the results of these negotiations, with a view to establishing a geological section of the concilium similar to that of other parts of the institution. This endorsement from workers in three entirely separate fields, arrived at entirely independently, is so striking that it needs no further comment. Never was the conjunction of circumstances for securing a thoroughly adequate bibliography of an entire group of natural sciences more marked. It is hoped, therefore, that the effort that Dr. Field is now making here will be crowned with success.

The special needs of the concilium are, in the order of importance: $3,500 for improvements in the Zurich plant, especially for the acquisition of a linotype printing machine; $4,000 for the liquidation of an accumulated debt; and at least $1,000 additional for current expenses.

Dr. Field especially invites criticisms and suggestions upon the work as it is now being carried on. From several persons the criticism has been made to the present writer that the cards accumulate too rapidly and are somewhat difficult of arrangement. This difficulty, in the nature of *embarras de richesse,* has been felt in many laboratories. It will be readily obviated, first, by the introduction of the guide cards which are supplied by the concilium, and which make the arrangement of the titles a purely mechanical matter; second, it is proposed, wherever desired, to limit the number of cards sent out which relate to certain local faunæ and are of purely local interest. These, and any other matters of criticism which may arise, Dr. Field, as director of the concilium, will be glad to receive and carefully consider as suggestions for improvement of the service. All those who are using the cards appreciate that, whatever criticisms as to details may be made, the concilium is doing a magnificent work, a work far surpassing in accuracy and fulness and readiness of arrangement that which has been done or is now being done elsewhere. Many of the former critics and opponents of the concilium are now recognizing its superiority, and it is certainly to be most earnestly desired that the United States should strongly support an undertaking which has been conceived and carried out only through the persistence, energy and devotion of an American.

Henry Fairfield Osborn.

CENTENNIAL CELEBRATION OF THE BIRTHDAY OF JUSTUS VON LIEBIG.

On the twelfth of May, by invitation of the New York Section of the Verein Deutscher

Chemiker, the members of the American Chemical Society, the Society of Chemical Industry and the Chemists' Club participated in a celebration in memory of the illustrious investigator and chemist, Justus von Liebig, who was born one hundred years ago.

The societies met in the assembly hall of the Chemists' Club and listened to addresses by Dr. Ira Remsen, president of Johns Hopkins University; Professor Wm. H. Brewer, of Yale; Dr. Carl Duisberg, vice-president of the Verein Deutscher Chemiker and managing director of the *Farbenfabriken* of Elberfeld, Germany.

The exercises were opened by Dr. Hugo Schweitzer, chairman of the Verein, who welcomed the assembly and foreign guests in a very appropriate address, and introduced the speakers.

Dr. Remsen outlined the early life of Liebig, mentioning his unpromising inaptitude for study at school, which resulted in giving it up and devoting himself to chemistry; his first interest in which was aroused by the study of colors and dye-stuffs. Later, while at a country fair, he saw an exhibition of Pharaoh's serpents, accompanied by some chemical operation connected with their preparation which led eventually to his study and investigation, while attending the lectures of Gay Lussac at Paris, of the cyanides, cyanates and fulminates. This work resulted in his introduction to Gay Lussac, who admitted him to his private laboratory. He was appointed a professor at the University of Giessen, in his twenty-first year, 1824, where his laboratory was of the crudest character, not much better than a barn without flooring; but from this modest beginning, with only six or seven students, his work grew and his reputation spread; a new laboratory was built and students came to it from all quarters.

During the twenty-eight years at Giessen the activity of Liebig and the work he accomplished were enormous; and he can be truly considered the greatest chemist of that time. His publications in scientific journals amounted to more than two hundred papers, in addition to his works on agriculture, organic chemistry and analysis; besides acting as editor of several scientific journals.

Coming to personal reminiscences of the time when he attended the lectures of Liebig at Munich, Dr. Remsen described the difficulty he experienced as a student in attempting to harmonize the old system as taught by Liebig, with the new as taught by his assistant, Volhard. Speaking of his methods, he said that all Liebig's lectures were profusely illustrated by experiments, many of them so elaborate as to be unthought of in the present-day lecture room—metallurgical experiments requiring wind furnace, and many others which the speaker said he would now hardly believe could have been done on the lecture table if he had not preserved his note-book filled with rude drawings of all the apparatus used.

Liebig was fond of a little dramatic effect, and took some care to bring his lectures to a climax with the most effective experiment, whether with a big flash of flame or an explosion or otherwise; and while the present method is more severe and straightlaced, the speaker said he was not certain that the impressions made and the train of thought aroused by Liebig's method were not very effective.

It was extremely difficult to get admission to Liebig's laboratory as a student; in fact, it was one of his conditions, on accepting the professorship at Munich, that he should not give his time or attention to students. In appearance, Liebig was large of stature and of fine bearing; one of nature's noblemen, but very emphatic in berating his assistants when the experiments went wrong, his language on such occasions being more remarkable for condensed energy than for rhetorical elegance.

Professor Brewer, who is the oldest living pupil of Liebig in this country, and who has been his devoted follower in the line of agricultural chemistry, told of his enthusiastic desire to study under him, aroused by reading a translation of his work on agriculture in 1846. A few years later he went abroad, and with letters of introduction went to Munich. Here he found Ogden Rood, afterward pro-

fessor of physics at Columbia University, who offered at once to introduce him to Liebig, and assist in every way toward the desired end. But Rood advised him not to use his letters of introduction; not to call Liebig 'professor,' but 'Herr Baron'; to have plenty of assurance, and not to spare flattery. With this preparation the introduction was brought about and Brewer stated his mission. Liebig assured him that he would do better to go somewhere else. He said: 'I will give you no attention; no attention.' This assurance met every advance until finally the speaker said: 'I told him I have come three thousand miles to sit at the feet of the greatest teacher of chemistry in Europe and I am going to remain here.' 'Well,' said Liebig, 'see Mr. Meyer.'

He saw 'Mr. Meyer,' and a place was set apart in the laboratory for the new student, who remained there a year, but actually received practically 'no attention,' except when he showed some organic crystals to him which had the appearance of potassium nitrate, and were so pronounced by Liebig on sight. The effort to convince him that they were organic was followed by a sound berating for 'contradicting,' which was later followed by demonstrating to the great professor that no contradiction had been intended, and that the crystals were in fact 'very peculiar.' Professor Brewer's address was full of personal interest and was followed with the closest attention.

Dr. Carl Duisberg read a paper describing the influence of Liebig on chemical industry, his teachings resulting in that knowledge of the importance of scientific method which has so largely displaced the 'rule-of-thumb' man by trained chemists in all the great chemical industries of Germany; and more or less in other countries. Liebig's influence was exerted chiefly on the organic chemical industries, and much of their progress is due to his activity and energy while at Giessen.

"A staff of his pupils making their way to all quarters of the globe disseminated his ideas in assisting agriculture and the chemical industries, and as the first systematic teacher of laboratory methods, the credit is justly due him for an influence which can hardly be measured or described."

Among those assembled to honor the memory of the great chemist were Mr. Ivan Levenstein, of Manchester, England, president of the Society of Chemical Industry, and his son, who represents the Levenstein Company, limited, in this country; Dr. Liebmann, also of Manchester; Drs. H. Reisenegger and F. Backe, of the color works at Höchst am Rhein; Dr. Teichmann, of Kuhnheim Works, Berlin; F. Bayer of Elberfeld; W. Haarmann and son of Holzminden, German; also Dr. T. J. Parker, chairman of the American Chemical Society; Dr. McMurtrie, ex-president of the same society; Professors W. H. Hallock and C. E. Pellew, of Columbia University; Charles A. Doremus, William Jay Schieffelin and others.

Durand Woodman.

*THE DALTON CELEBRATIONS AT MANCHESTER.**

The Manchester celebrations in connection with the centenary of Dalton's atomic theory began on Tuesday afternoon, May 19, when Professor F. W. Clarke, chairman of the International Commission on Atomic Weights, delivered the Wilde lecture on the 'Atomic Theory' to the Manchester Literary and Philosophic Society. Addresses were presented on behalf of the Royal Society and the Chemical Society, and a message was received from the Russian Physico-chemical Society. In an admirable discourse Professor Clarke sketched the history of the atomic theory from its first conception in the minds of Greek philosophers down to the present day. He pointed out the directions in which the atomic theory would probably develop, but declared that the problem of matter would never be solved until the atomic weights of the elements had been finally settled. "Who," he asked, "will establish the Dalton Laboratory for pure research, and so give the work which he started a permanent home?"

In the evening the Literary and Philosophical Society gave a dinner, at which the prin-

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